



# Quality Assurance/ Quality Control

Rob Quigley

**“The *bitterness of poor quality* remains long after the *sweetness of low price* is forgotten.”**

**- Benjamin Franklin**

Or...

**The *bitterness of poor quality* remains long after the *sweetness of ‘on time and under budget’* is forgotten.**

# What are we going to talk about?

- How do you Measure Quality?
- Who is Responsible for Quality?



# What is Quality?

***“Quality is not an **Act**... it is  
a **Habit.**”***

***- Aristotle***

# What is Quality?

- The PMBOK defines quality as **“the degree to which a set of inherent characteristics fulfills requirements.”**
- The FDOT QA/QC Procedure defines quality as **“conformance to valid customer requirements (including laws, rules, procedures, policies and standards).”**

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**WE OFFER 3 KINDS OF SERVICES**  
**GOOD-CHEAP-FAST**  
**BUT YOU CAN PICK ONLY TWO**

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**GOOD & CHEAP** WON'T BE **FAST**

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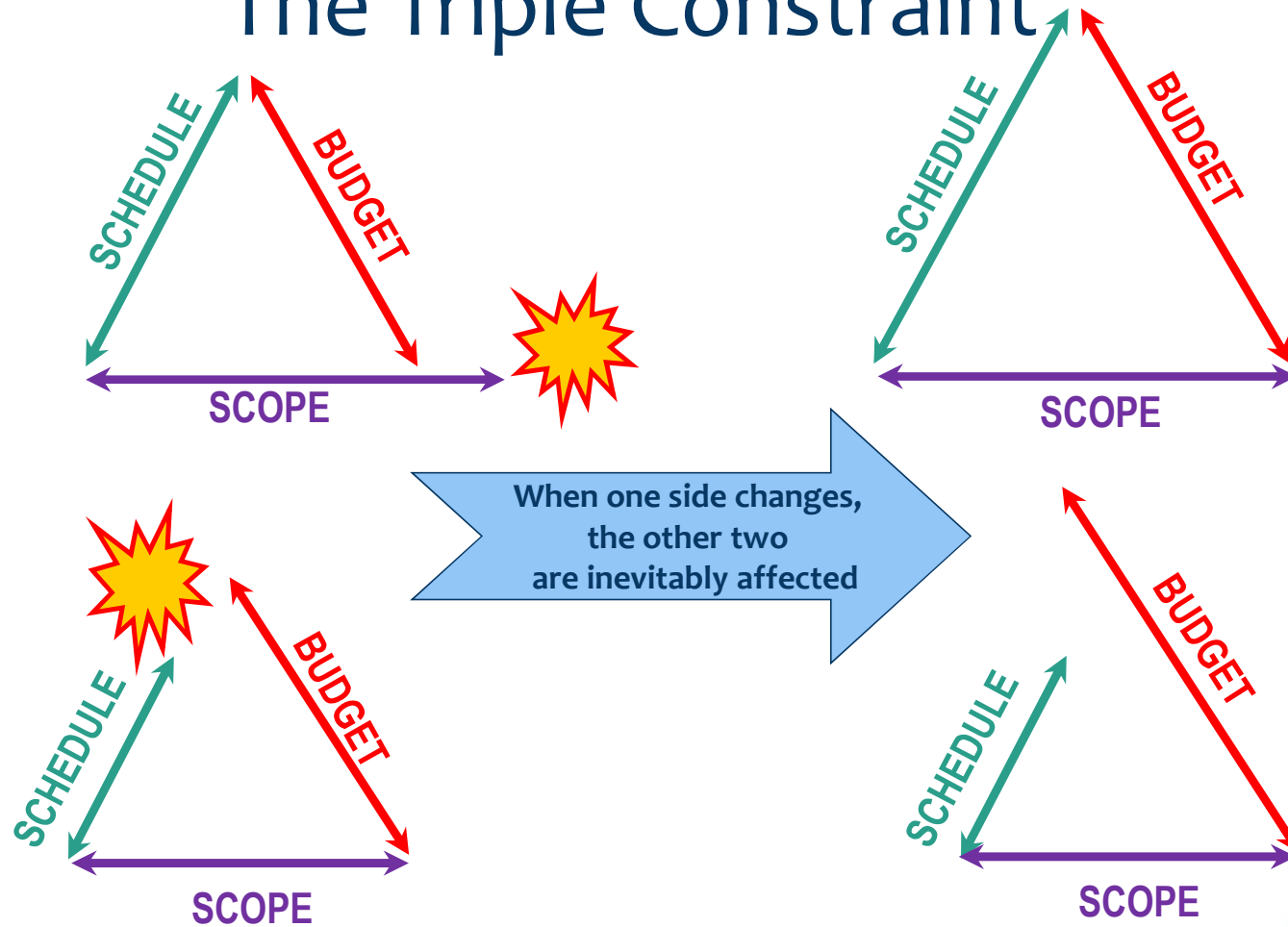
**FAST & GOOD** WON'T BE **CHEAP**

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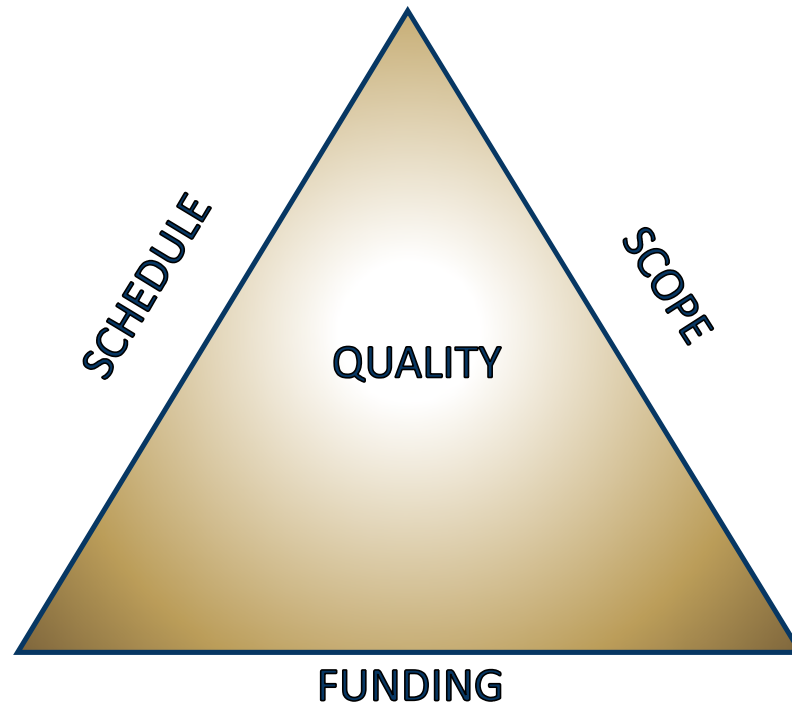
**CHEAP & FAST** WON'T BE **GOOD**

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# The Triple Constraint







***“It takes less time to do things right than to explain why you did it wrong”***

***- Longfellow***

# How do you Measure Quality?



# What is QA/QC?

- Subsection 20.23(3)(a), Florida Statutes requires a Quality Assurance Process...



(3)(a) The central office shall establish departmental policies, rules, procedures, and standards and shall monitor the implementation of such policies, rules, procedures, and standards in order to ensure uniform compliance and quality performance by the districts and central office units that implement transportation programs. Major transportation policy initiatives or revisions shall be submitted to the commission for review.

# What is QA/QC?

- **Quality Assurance** and **Quality Control** are the processes used to **ensure** that the project **deliverables meet** the project **objectives** and are of an appropriate **quality**.
- What is the difference?

# Quality Assurance

- What is Quality Assurance?
  - **Quality Assurance (QA)** is the planned, coordinated and continued activities performed to **measure** processes **against predetermined critical requirements**.  
(PPM, V1Ch18)
  - Requirements of the “WHAT”

# Quality Assurance

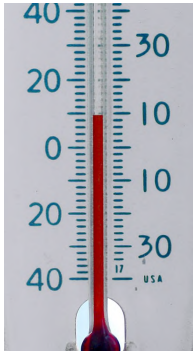


*A Health Inspector walks into a bar...*

*... (or a restaurant)...*

*... to review how the establishment follows health codes for:*

# Quality Assurance



- **Cleanliness**
- **Food Preparation**
- **Food Storage**
- **Food Service**
- **Other code violations**

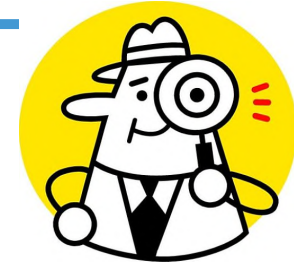


Employees must  
wash hands  
before returning  
to work.





# Quality Assurance



*The inspector is NOT there to comment on:*

- *Spelling errors on the billboard*
- *Mistakes on the menu*
- *Word spacing issues on the sign*



# Quality Control

- **What is Quality Control?**
  - **Quality Control (QC)** Quality Control is the **process performed to ensure conformance with valid requirements.** (PPM, V1Ch18)
  - Requirements of the “HOW”

# QA/QC

- Plans Preparation Manual states:
  - Each District shall have a **District Quality Control Plan** (V1Ch18)
  - Each Project shall have a **Project Quality Control Plan** (V1Ch18)



In-house and consultant designers and reviewers must recognize quality is the result of several processes. It requires many individuals performing many appropriate activities at the right time during the plans development process. Quality control does not solely consist of a review after a product is completed. Quality requires performing all activities in conformance with valid requirements, no matter how large or small their overall contribution to the design process. Good CADD techniques, attention to details and ensuring the plans are correct and useful to the contractor are also essential to quality.

# Quality Assurance

- **What is the District Quality Assurance Plan?**
  - Where do you find it?
  - What is in it?
  - How does it apply to you?
  - What are the Phase submittal expectations?

# FDOT Design Quality Assurance Guidelines

## - UNDER DEVELOPMENT -

1. Introduction – General Information/Definitions
2. Roles & Responsibilities
3. Submittal Review Process
4. Best Practices

# Quality Control

- **What is the Project Quality Control Plan?**
  - Who prepares it?
  - Where do you find it?
  - What is in it?
  - How does it apply to you?
  - What are the Phase submittal expectations?

# Project-Specific QC Plan

- When is this produced?
- What it should include:
  - Description of QA/QC procedures to be used
  - Specific staff and their responsibilities



# Project-Specific QC Plan



- Typical procedure?
  - Originator produces submittal
  - QC reviewer critiques, marks up, & returns to Originator
  - Originator reviews markups & meets with QC reviewer
  - Corrections made and document(s) resubmitted to QC reviewer
  - QC reviewer verifies corrections made, returns to Originator
  - Document(s) submitted to FDOT for review



# Elements of a Project Specific QC Plan

Elements of a project specific QC plan include:

- Introduction
- QC Process
- Design Documentation Requirements
- Handling of FDOT review comments
- Training
- Quality Control Organization
- Sub Consultant QA/QC
- Quality Assurance

QUALITY ASSURANCE / QUALITY CONTROL PLAN	
CLIENT:	FDOT District 9
PROJECT:	(SR500) Widening and Reconstruction from Lowes County Line MP 0.00 to East of Ashley Road MP 2.541 555555-5-55-55 Gibbens County
ACME Consulting Engineers Project No.: 5555555 January 15, 2010	

# Who is Responsible for Quality?



***“Quality is everyone’s  
responsibility.”***

***- W. Edwards Deming***

# QA/QC Responsibilities on Consultant Projects

- On consultant prepared design projects, Quality **Control** is the consultant's responsibility and generally Quality **Assurance** is the District's responsibility.
- Consultant management has a QA responsibility for work performed in-house and by subconsultants. Also, Districts do perform some QC reviews on consultants' work.



# FDOT PM's QA Responsibilities

# FDOT PM's QA Responsibilities

- Responsible for **Ensuring**:
  - Submittal properly loaded into the ERC system
  - Submittal package is complete
  - Consultant performed Quality Control
  - Review team includes appropriate individuals
  - Review team members are providing timely input
  - EOR responds to all plan review comments



# FDOT PM's QA Responsibilities

In general, the Department and project Scope of Services require the FDOT PM should:

- Review and approve the consultant's Project QA/QC Plan
- Monitor the consultant's adherence to the consultant's Project QA/QC Plan
- Make sure QA activities are documented in the Project files

FDOT PM MUST	
QUALITY	<ul style="list-style-type: none"><li>◆ Assure that a process is in place and functioning that will result in quality products (Quality Assurance).</li><li>◆ Coordinate reviews by other FDOT reviewers and forward comments, after eliminating those that are redundant and inappropriate and deciding which to give the consultant when comments are in conflict.</li><li>◆ Be responsive to the needs of the consultant.</li></ul>

Ref: PMH P1, Ch 7.4

# FDOT PM's QA Responsibilities

## FDOT PM MUST

### QUALITY

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Ref: PMH P1, Ch 7.4



# Electronic Review Comments System

- Facilitates QA Review by the Department
- Ensuring Department requirements are in project
- Tool is applicable to reviews on any type of project or item



# Consultant Evaluations



- Procedure No. 375-030-007
- Evaluate Annually (at least)
  - Management
  - Schedule
  - Quality
- Consideration for Constructability

# Consultant PM's QC Responsibilities

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- In general, the Department and project Scope of Services require the Consultant PM to:
  - Develop a project specific QA/QC Plan
  - Get the plan approved by FDOT

Consultant PM MUST	
QUALITY	<ul style="list-style-type: none"><li>◆ Provide the necessary reviews and checks to provide quality products (Quality Control).</li><li>◆ Comply with all laws and rules related to the practice of professional engineering.</li><li>◆ Ensure that all submittals are complete and of an acceptable quality.</li><li>◆ Allow sufficient time and staff hours to perform quality control reviews on all submittals, in accordance with the project QC plan.</li><li>◆ Be responsible for the completed project.</li></ul>



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## EOR / Design PM Responsibilities



- **Designs** the project
- **Performs** Quality Control
- **Prepares** the submittal
- **Communicates** anything special about the submittal
- **Reviews** comments and provides responses
- **Coordinates** with FDOT PM on comment resolution
- **Implements** the agreed upon changes from comments
- **Accepts** responsibility for the design

# QA/QC Process Responsibilities

*“There may be no ‘i’ in ‘team’...  
...but ‘u’ & ‘i’ are in ‘Quality’.”*

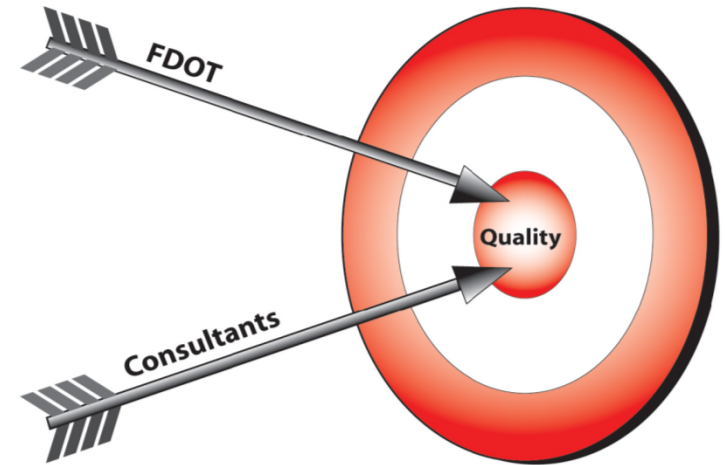
*- Unknown*



# QA/QC Process Responsibilities

Working together, FDOT and consultant PMs must:

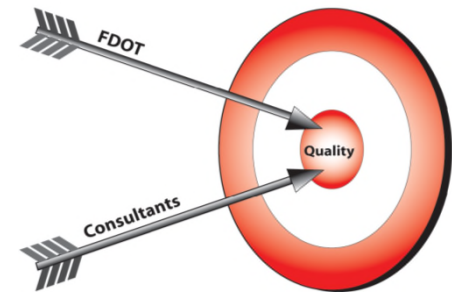
- Target quality
- Ensure deliverables meet objectives
- Understand that perfection is very difficult to achieve and cost prohibitive
- Make sure review comments do not trigger work outside of Scope of Work and/or Scope of Services



# QA/QC Process Responsibilities

Staying on target:

- Budget adequate time
- Qualified design staff
- Qualified review staff
- Consistent reviewers & reviews
- Follow QA & QC Plans
- QA audit of QC documentation
- Make clear and value added comments
- Provide detailed comment responses
- Verify previous comments addressed
- Make Quality a Habit
- Communicate



# Summary

## Quality Assurance/Quality Control

- How do you Measure Quality?
- Who is Responsible for Quality?

**“Good judgment is the result of  
experience...**

**... and experience is the  
result of bad judgment.”**

**- Mark Twain**



# Quality Assurance/Quality Control

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